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ABSTRACT

A discussion of research on naturalistic second language acquisition (SLA) focuses on its relationship to the foreign language classroom context. It is argued that to attempt to relate natural SLA to classroom foreign language learning (FLL), a coherent and consistent theoretical framework is needed. The Cognitive-Interactionist Model is developed here. It consists of a model of interlanguage development, the Nativization Model, a set of psycholinguistic processes, and a group of principles that seem to underlie SLA and, it is claimed, FLL. The principles are based on a theoretical framework developed for first language acquisition. The evidence for each principle is discussed, drawing on SLA research for a number of languages. Proposals are made for innovative research that can be conducted in the classroom foreign language context within the Cognitive-Interactionist Model to investigate further the relevance of this model to FLL. A brief examination of the role of interaction and communication strategies in promoting SLA concludes the discussion. A 71-item bibliography is included. (MSE)

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MODELS, PROCESSES, PRINCIPLES, AND STRATEGIES: SECOND LANGUAGE ACQUISITION IN AND OUT OF THE CLASSROOM

Roger W. Andersen

This paper relates research on naturalistic second language acquisition (SLA) to the foreign language classroom context. It is argued that in order to attempt to relate natural SLA to classroom foreign language learning requires operating within a coherent and consistent theoretical framework. This paper develops a particular theoretical framework, the Cognitive- Interactionist Model, which consists of a model of interlanguage development, the Nativization Model, a set of psycholinguistic processes, and a group of principles which seem to underlie second language development (and, it is claimed, foreign language learning).

These principles are based on the Operating Principles framework developed by Dan Slobin for first language acquisition. Only principles for which there is considerable empirical evidence for second language acquisition are considered valid for SLA, however. The evidence for each principle is discussed, drawing on research on SLA of a number of different languages. Proposals are made for innovative research that can be conducted in the classroom foreign language context within the Cognitive-Interactionist Model to investigate further the relevance of this model to foreign language learning. The paper concludes with a brief discussion of the role of interaction and communication strategies in promoting second language development.

PUTTING ORDER IN OUR INQUIRY

This paper relates empirical research on primarily natural untutored second language acquisition to the foreign language classroom environment. The goal is to provide a new perspective on how foreign languages can be acquired from natural language input within the limited confines of a foreign language classroom. The model of second and foreign language acquisition presented here is intended to be especially relevant to the ***Authentic Language Plus Model***, being developed by the author, but it is phrased in more general terms that do not require adherence to any specific authentic language model. It does require, however, a model of instruction that allows students

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to come into contact with authentic language as a major part of their language instruction.

To relate the two types of language acquisition, naturalistic second and tutored foreign language acquisition, requires, I believe, close attention to at least four basic distinctions:

a. Models of how a second language is "acquired" and used.

b. Explicit characterization of the psycholinguistic processes involved in the acquisition and use of a language.

c. Empirical verification of psycholinguistic principles that govern development of the language being learned.

d. Empirical verification of the strategies learners use to communicate with their non-proficient linguistic competence.

I am assuming that the same processes, principles, and strategies will be shared to a great extent across different settings, different types and ages of learners, and different circumstances for learning and using the second/foreign language. By working with a particular model and the processes, principles, and strategies that fit within that model, it should be easier to recognize the effect of setting-, learner-, and language-specific variables on the language acquisition process and the final outcome. I further believe that only by working within such a common framework can we carry out the type of new innovative research that will eventually allow us to intervene more successfully in the acquisition process to bring about faster, more efficient, and more successful learning of a foreign language as the result of such research.

Most of this paper will be devoted to outlining a particular model of second/foreign language acquisition and the processes, principles, and strategies that fit within that model. Since these terms could mean different things to different people, let me define as clearly as possible what I mean by each. I will draw on the American Heritage Dictionary for the first three definitions and a psycholinguistics textbook for the fourth.

1. MODEL (p. 843): "A tentative ideational structure used as a testing device..."

2. PROCESS (p. 1043): "1. A system of operations in the production of something. 2. A series of actions, changes, or functions that bring about an end or result."

3. PRINCIPLE (p. 1041): "4. A basic, or essential, quality or element determining intrinsic nature or characteristic behavior... 5. A rule or law concerning the functioning of natural phenomena or mechanical processes...

4. STRATEGY (from Clark & Clark 1977:567) "A method by which people go about solving problems."

The model I will follow is basically a psycholinguistic model with a socio- interactive component. In taking this approach, I am agreeing with Clark and Clark (1977:vii) that "one of the principles that gives the field [of psycholinguistics] coherence is that psycholinguistics is fundamentally the study of three mental processes -- the study of listening, speaking, and the acquisition of these skills ..." and that "another principle that gives the field coherence is that the primary use of language is for communication." Although processes, principles, and strategies eventually must all be elaborated and supported empirically to an equal degree, in this discussion I will focus most heavily on the cognitive operating principles that seem to govern interlanguage construction.

A COGNITIVE-INTERACTIONIST MODEL OF SECOND LANGUAGE ACQUISITION

Any psycholinguistic model[1] of naturalistic (i.e., non-instructed) second language acquisition has to somehow capture minimally the following: (1) Learners do attempt to communicate (and often succeed) with a very minimal competence in the second language. (2) Through such attempts to communicate the learner comes to perceive linguistic devices used by native speakers (or more proficient nonnative speakers) that previously he had not perceived. (3) Somehow the learner incorporates these new perceptions into his interlanguage system, i.e., his developing internal representation of the language he is learning. (4) This internal representation is initially and even for a long time very different from what it must be for a near-native or native speaker. (5) Thus, when he incorporates a new linguistic device (a phonological contrast, a lexical class distinction, an inflection, an auxiliary or subject-verb inversion) into his interlanguage, it fits into the learner's evolving interlanguage system and does not bring with it the full meaning, function and distribution it had in the native speaker's linguistic system. (6) Over time, however, the learner gradually restructures his second language linguistic system in terms of increasingly finer congruence with the native target system, provided the conditions are right for such restructuring over time.

In earlier work (Andersen 1979b, 1980, 1983a, 1984a) I tried to capture this view of creation of an internally consistent interlanguage system through

verbal interaction with more proficient speakers of the second language in what I have called the Nativization[2] Model. In this model nativization refers to the composite of presumably universal processes and principles which guide an individual language learner in the creation of an internal representation of the language he is acquiring and subsequent assimilation of new input to that gradually evolving internal representation. In the original phrasing of the model (Andersen 1979b:109) I included reference to an opposing "force," denativization, which was characterized as "the gradual restructuring of the learner's somewhat unique and idiosyncratic internal representation of the language he is acquiring in terms of the input he processes during language acquisition." Nativization constituted development independent of the nature of the target language system and denativization as development towards that target system. Subsequent research has made it clear that nativization and denativization are not two separate processes or "forces," but simply represent different extremes in the result of the overall process of second language acquisition, which could be plotted along a continuum ranging from furthest from the target language system (the nativized end) to closest to the target language system (the denativized end).

This paper is an attempt to specify more fully the psycholinguistic processes, cognitive operating principles, and communicative strategies that fit within this overall conceptualization of the Nativization Model. I assume that the Nativization Model, being a psycholinguistic model of individual second language acquisition under a variety of different circumstances, applies equally well to a classroom environment. The classroom environment, however, must be one in which the learner has some reasonable access to and control over the input from which he is to acquire the second or foreign language as well as some means of carrying on meaningful communicative interaction at a level suitable for his linguistic competence at any one point in time, so that he can utilize these processes, principles, and strategies effectively to gain access to specific target language linguistic devices and gradually incorporate these devices into his interlanguage system.

PSYCHOLINGUISTIC PROCESSES

The basic task in language learning is to get the language that is outside the learner's head inside his head. In formal classroom learning, it is assumed that clear, orderly, explicit presentation of bits and pieces of the language in some logical sequence will accomplish this task. In naturalistic non-instructed SLA, it is assumed that the learner must somehow impose order on the language he is exposed to and make sense out of it, in order to 'get it inside his head.' In both settings the psycholinguistic processes involved are usually assumed and seldom made explicit. If we are to relate SLA research to the foreign language setting, these processes need to be made more explicit.

It is clear from such studies as Brown 1973 and Peters 1977, 1983, 1985 for first language acquisition and Hakuta 1974, 1976, Huang and Hatch 1978, and Wong-Fillmore 1976, 1979 for second language acquisition that both first and second language learners are fully capable of perceiving and extracting meaningful segments of language from the input directed to them. Such a capacity for perceiving, analyzing, storing and somehow organizing in memory meaningful bits and pieces of language without any formal instruction must be an important prerequisite for any language learning. Slobin 1985 incorporates Peters' (1985) principles for perceiving, storing and tagging such segments of speech into his revised group of forty Operating Principles for first language acquisition. These initial basic principles are the first eight Operating Principles of his group of principles. They are the first group because they are prerequisite to all the others. Four examples of these initial operating principles are (Slobin 1985:1251-2):

ATTENTION PRINCIPLES:

SOUNDS:Store any perceptually salient stretches of speech.

STRESS:Pay attention to stressed syllables in extracted speech units. Store such syllables separately and also in relation to the units with which they occur.

STORAGE PRINCIPLES:

FREQUENCY:Keep track of the frequency of occurrence of every unit and pattern that you store.

UNITS: Determine whether a newly extracted stretch of speech seems to be the same as or different from anything you have already stored. If it is different, store it separately; if it is the same, take note of this sameness by increasing its frequency count by one.

In addition to perceiving and storing such segments, the learner must impose some organization on them within his memory, so they can be retrieved rapidly and accurately and integrated into the stream of speech during production (as well as utilized during comprehension). Lenneberg (1967:89-120) has shown how the brain is capable of incredible coordination and planning of speech on all linguistic levels in order to access the information stored in memory and integrate it rapidly in linear order in speech production. Somehow when the learner perceives, tags, and stores segments of speech during natural interaction with the providers of input, these seg-

ments are stored in such a way that they can be accessed rapidly and thus readily available for integration into spontaneous speech production.

The psycholinguistic constraints on speech perception and production are well known (cf, for example, Clark and Clark 1977). Within a psycholinguistic framework, Clahsen (1984) has drawn on three language processing strategies to explain the order of acquisition of a number of word order and negative placement rules in German by noninstructed immigrant workers in West Germany. He concludes that the first interlanguage structures to emerge are those which conform to these strategies. The next structures to emerge in a subsequent stage violate one but conform to the other two strategies, followed by structures which violate two and finally all three strategies. He thus argues that delay in acquisition of certain word order permutations is a consequence of these processing constraints: it takes time for the learner to override these constraints and acquire the mechanism for doing so.

What then does this mean for the foreign language classroom setting? Pienemann (1985, 1987) has carried out studies in a classroom setting to test the hypothesis that instruction will have an effect on acquisition only if the learner has reached the stage where he is "ready" to incorporate the new rule or structure into his linguistic system. This study, which supports the hypothesis, is based on Clahsen's formulation of the three processing strategies and the German SLA project conducted by Clahsen, Meisel and Pienemann (see, e.g, Clahsen et al. 1983, Clahsen 1984, 1987).[3]

A related question is whether the input that is provided for learners in a classroom can be carefully controlled in order to conform to this series of constraints. By this I mean meaningful input supplied for communication, not the usual rules, examples, and paradigms for memorization and practice.[4] A worthwhile hypothesis to test is whether constructions that do not violate these processing strategies are easier to comprehend, imitate, and also produce spontaneously within a classroom context than similar constructions which differ only in terms of the number of strategies they violate. This is, of course, a proposal for research, not a prescription for teaching methodology.

Another more difficult hypothesis to test would be that the bits and pieces of input that are perceived, tagged and stored in memory must be accessed in the input through meaningful communicative interaction for the brain to be able to store these segments in such a way that they can later be accessed rapidly and integrated into a novel utterance at a different point in time. That is, the familiar lists, paradigms and rules of foreign language classrooms are not readily accessible for this purpose precisely because they are not the result of such communicative interaction. Such a hypothesis seems to underlie the emphasis on communicative language teaching during

the past decade as well as any teaching approach that attempts to provide an acquisition rich environment within the classroom (e.g., Krashen and Terrell 1983).

COGNITIVE OPERATING PRINCIPLES

I will now turn to the major area of this paper: the cognitive operating principles that govern the path the learner takes in developing an increasingly more native-like and more efficient and successful linguistic competence in a second language. During the past several years I have been influenced considerably by the first-language acquisition work of Dan Slobin in this area (Slobin 1973, 1977, 1982, 1985). I will proceed to discuss seven potential operating principles for second language acquisition which I believe are consistent with the psycholinguistic processing framework I have just touched on. Most of them can be related directly or indirectly to one or more of Slobin's operating principles. They are not, however, simply a translation of Slobin's principles into the domain of SLA. In fact, they are more macro-principles in that each one would correspond to a group of more succinct operating principles within Slobin's framework. In addition, two of these principles are mainly relevant to second language acquisition.

Just how many such principles are needed to begin to account for empirical evidence within the field of second language acquisition is a difficult question to answer. For native language acquisition, Slobin has increased his initial seven operating principles (Slobin 1973) to forty (Slobin 1985). The principles that I discuss here have evolved primarily out of my own research on the acquisition of Spanish and English as second languages, as well as my understanding of related research on other languages. I find they are a major improvement over the two principles I began with several years ago (the One-to- One Principle and the Transfer to Somewhere Principle) and contribute to a further elaboration of the Nativization Model.[5]

(1) The One-to-One Principle.

This principle states that:

> *"an interlanguage system should be constructed in such a way that an intended underlying meaning is expressed with one clear invariant surface form (or construction) (Andersen 1984a:79)".*

The motivation for such a principle is probably the processing constraints discussed earlier. In fact, the earliest constructions to emerge in German, following Clahsen's (1984) three processing strategies, conform to the One-to-One Principle. His subjects initially maintained a subject-verb-object

word order, even though native German requires verb-subject order in certain contexts, clause-final placement of nonfinite verb forms, after any object or adverbial, and final placement of finite verb forms in subordinate clauses.

Native French and Spanish require clitic objects to be placed preverbally, but in early stages of SLA of these languages learners maintain the canonical postverbal position, which conforms to the 1:1 principle, since full NPs and pronouns alike are placed in the same postverbal position (see Zobl 1980, Andersen 1983b). In placement of a negator, native English, French, German, and Swedish each has language-specific rules which are hard to acquire. For each of these languages learners initially choose the simplest solution, which conforms to the 1:1 principle: place the negator directly before[6] the entity to be negated (the verb or predicate, for propositional negation) (see Andersen 1984a:81-2 for further details).

Articles in German and Spanish (and many other languages) encode, in addition to specificity of the referent, gender, number, and, for German, case. Learners, however, initially disregard all but specificity as the relevant meaning to encode (Andersen 1984b, Gilbert & Orlovic 1983, Pfaff 1987; see also Huebner 1983, 1985). Personal pronouns similarly encode a number of features in native languages like English, German, and Spanish. In second-language Spanish, there is a strong tendency to disregard case marking and use the same form (usually a stressed form) for subject, direct & indirect object, and possessives (Andersen 1983b).

Finally, a number of first and second language acquisition studies (summarized in Andersen, 1986a,b) suggest that learners first use past- reference verbal morphology according to whether the event is punctual (i.e., one simple completed act of limited duration). In first and second language acquisition of English, past morphology (especially strong past) is first attached to punctual verbs (Antinucci & Miller 1976, Bloom et al 1980, see Andersen 1986a,b for discussion of SLA). In Spanish, there are two past forms: preterit and imperfect. The preterit is the first form to be used (Jacobsen 1986, Simões & Stoel-Gammon 1979, Andersen 1986a, 1986b). The preterit form is initially restricted to punctual events and, when the imperfect form begins to emerge, it is restricted to states. Both of these cases conform to the 1:1 principle.

What does a 1:1 principle mean for the foreign language classroom context of SLA? Perhaps a one-form-one-meaning relation is inevitable as a first entry into a language. If so, a major goal of foreign language research should be to discover what form-meaning relations learners initially perceive and incorporate into their interlanguage. The assumption is that an acquisition- directed language pedagogy should work within such natural tendencies. After discussion of the next principle, I will discuss further what type of research might be productive in this area.

(2) The Multifunctionality Principle.

Statement of the principle:

(a) Where there is clear evidence in the input that more than one form marks the meaning conveyed by only one form in the interlanguage, try to discover the distribution and additional meaning (if any) of the new form. (b) Where there is evidence in the input that an interlanguage form conveys only one of the meanings that the same form has in the input, try to discover the additional meanings of the form in the input.

It might seem strange, after discussing a 1:1 principle, to suggest that there is pressure for a learner to move towards an interlanguage system where a given form is multifunctional. But such a principle seems inevitable. This is evident from at least two perspectives. First, all native languages appear to incorporate a considerable amount of multifunctionality into their linguistic systems. Second, when a learner moves away from a 1:1 representation of form to meaning it is usually in the direction of multifunctionality in existing forms (along with addition of new forms).

Why should a learner feel compelled to abandon an initial 1:1 principle? Slobin 1977 has discussed four metaphorical charges to language that any natural language must obey: 1 Be clear, 2 Be humanly processible in ongoing time, 3 Be quick and easy, and 4 Be expressive. The 1:1 principle conforms to the first two charges. The multifunctionality principle addresses the second two. The communicative and phatic functions of language require the user to be able to express a wide range of meanings, intentions, and perspectives ("Be expressive") and to do so as quickly as possible and in such a way that it is easy for the listener to interpret his or her intentions ("Be quick and easy"). These two charges require considerable multifunctionality of forms and constructions. Another way to put it is that by using fewer forms and constructions and letting each one perform a number of different functions, the speaker can get across a richer, more complex message and do it easier and faster.

How then does the learner move from a 1:1 principle towards multifunctionality? One way seems to be that once the learner has incorporated one form into his repertoire (for example, no for all uses of negation: no the dog, he no go), he can perceive alternate forms (e.g., not, don't) and differentiate the environment in which they occur (e.g. no for anaphoric negation, don't for preverbal negation and not for everything else). That is, having one of the forms in his interlanguage allows him to perceive the multiple forms for that one meaning. In cases where there is one form

with multiple meanings, it seems that, in some cases at least, the learner is able to extend the initially limited scope of a form to a wider range of lexical items to which it can be attached by analogy. For example, in natural nontutored SLA of Spanish, learners begin to use the past preterit verb form for purely punctual, nondurative events and the present form or, somewhat later, the imperfect form, for all other verbs. But once the learner has begun to use the past preterit verb form (e.g. cayó 'fell') for strictly punctual and nondurative events he can extend the form to a wider range of verbs that are both punctual and durative (corrió una milla 'he ran a mile'), and from there to completely nonpunctual but durative events like jugó 'he played,' using the preterit form now to impose a punctual type interpretation on the event (contrasting with a durative interpretion: jugaba 'he played/he would play/he was playing; see Andersen 1986b for more details.) These developments are depicted in examples 1 and 2 below:

(1)
1. **No**! **No** the dog. He **no** go
2. **No**! **Not** the dog. He **dont** go.
3. **No**! **Not** the dog. He **didn't** go.

(2)

1.	cae	corre	juega
2.	**cayó**	corre/corria	juega/jugaba
3.	**cayó**	**corrió** una milla	juega/jugaba
4.	**cayó**	**corrió** una milla	**jugó**

I believe, however, that the ways in which a 1:1 relationship expands into a multifunctional one vary from case to case depending on certain aspects of the native language of the learner and the language being learned, as well as additional principles which I will be discussing shortly. That is, various of these operating principles interact with each other.

The 1:1 principle together with the Multifunctionality Principle should have important implications for innovative new research within a foreign language classroom. If there is a "preferred" path of development from an interlanguage form or construction that conforms to the 1:1 principle through various interim structures up to the full native multiform and multifunction system, then a logical hypothesis to test in research is that learners will acquire easier and faster input that is controlled systematically to match this preferred path (i.e., with the input changing as the learners move up to a level where they can efficiently process the more complex input).[7]

I should provide equal time for a counter-proposal and a clarification of what I am proposing. First of all, a counter-hypothesis would state that controlling input (and thus depriving the learner of examples of something he will acquire much later after many such examples) will actually retard

development and promote an early fossilized interlanguage, quite the opposite of what one might hope for. This is a logical counter-hypothesis and one that should be pursued in such research. I need also to clarify that I am not proposing that such modification of input is a simple task that any teacher can or should do. This is a proposal for research, not a prescription for pedagogical intervention. Moreover, such a research proposal does not address the possible need for control over the ways the learner should interact with the suppliers of the input and with fellow students to facilitate internalization of the form:meaning relations in the input. On this matter, see Long 1981, Hatch, Flashner and Hunt 1986, and Sato 1986.

(3) Formal Determinism.

One of the principles which guides the learner from a unifunctional to a multifunctional linguistic system is the principle of formal determinism. Basically this states that:

> *when the form:meaning relationship is clearly and uniformly encoded in the input, the learner will discover it earlier than other form:meaning relationships and will incorporate it more consistently within his interlanguage system.*

In short, the clear, transparent encoding of the linguistic feature in the input forces the learner to discover it.

The example of English negation mentioned earlier seems to be partly the result of formal determinism. Many learners initially place no before any constituent to be negated: *no here; they no work; my brother no in school,* following the 1:1 principle. When they discover other forms it is because the other forms, not and dont, are modeled clearly in the input in such a way that they differ from each other and from no in their distribution. Evidence for this is that learners generally restrict dont to preverbal environments (which do not include the copula), no to anaphoric use, and not to negated constituents such as equative predicates, NPs, adverbs, and the like. Even with such complexities in the input as the imperceptibility of certain contractions, such as *is* n't vs *is* not, English seems to offer a clear enough model for which form belongs with which context to allow the learner to abandon his earlier 1:1 system of negation.

In the cases of German and French negation, the clear postverbal position of the negator (nicht in German, pas in French) is strong enough to pull the learner away from his earlier preverbal position (or, perhaps in many cases, to cause the learner to opt for a postverbal position from the start).

In second language acquisition of Spanish, I already mentioned the early preference for postverbal placement of objects even though native Spanish requires preverbal clitics. Thus learners will say:

(3)

	'the police		want	him'
learners:	la policía		quiere	**él**
native Spanish:	la policía	**lo**	quiere	

using the same form él for subject and object. When learners first begin to perceive the preverbal position of clitics it is with those clitics that are distinctly and invariantly marked: the first person singular me and plural nos. These are the same forms for direct object, indirect object, and reflexive. Third person clitics, however, have different forms for each of these functions and also differ according to gender. This complexity delays their acquisition in comparison with the first person clitics.

(4)

CLITICS:	D.O.	I.O.	REFLEXIVE
1sg.	*me*	*me*	*me*
1pl.	*nos*	*nos*	*nos*
3sg. masc.	lo	le	se
3sg. fem.	la	le	se
3pl. masc.	los	les	se
3pl. fem.	las	les	se

In a similar fashion (see (5)) the plural subject-verb agreement markers - mos for first person and - n for third are acquired before first person singular - o. The plural agreement markers are consistently and invariantly used across the entire verb inflection paradigm, whereas the first singular inflection -o is restricted to present indicative. Thus the formal consistency and clarity of certain forms in the input promote early discovery of them and the meanings they encode.

(5) AGREEMENT MARKERS ON VERB:

	PRESENT IND	PRESENT SUBJ	IMPERFECT IND	IMPERFECT SUBJ	PRETERIT (1)	PRETERIT (2&3)	FUTURE	COND.	PERF. /PROG. AUXILIARIES	
1sg.	-o	-	-	-	-é	-í	-(r)é	-(ría)-	he	/ estoy
3sg.	-	-	-	-	-ó	-ió	-(r)á	-(ría)-	ha	/ está
1pl.	*-mos*	*-mos*	*-mos*	*-mos*	*-mos*	*-mos*	*-(re)mos*	*-(ría)mos*	*hemos*	*/ estamos*
3pl.	*-n*	*-n*	*-n*	*-n*	*-ron*	*-ron*	*-(rá)n*	*-(ría)n*	*han*	*/ están*

It should be apparent at this point how the principle of formal determinism contributes to the effect of the Multifunctionality Principle.

At the end of the previous section, I suggested that new research be done to test the hypothesis that controlling the input in the foreign language classroom in a manner consistent with the Multifunctionality Principle would pro-

mote faster and more accurate acquisition of the constructions so controlled. In effect this would mean altering the natural formal determinism or lack thereof in the unmodified input. Thus a related hypothesis that could be tested in a foreign language classroom setting would be that when a given form:meaning relation is infrequently encoded in the input and/or encoded in complex and opaque ways, acquisition of this form:meaning relation can be facilitated by artificially increasing the frequency of the form in the input as well as making the form:meaning relation more transparent (by temporarily excluding from the input the more opaque forms). This is what most good teachers and textbooks attempt to do anyway. The basic difference here is that such a study would attempt to empirically verify whether such control over the input has the positive effect that we commonly assume it to have.

(4) Distributional Bias.

As stated, the Formal Determinism Principle promotes discovery of the correct form:meaning relationship (from a target-language perspective). But there are also properties of the input that promote the incorporation of an inappropriate form:meaning relationship into the interlanguage. That is, the learner misperceives the meaning and distribution of a particular form that he discovers in the input, following the Distributional Bias Principle:

> *If both X and Y can occur in the same environments A and B, but a bias in the distribution of X and Y makes it appear that X only occurs in environment A and Y only occurs in environment B, when you acquire X and Y, restrict X to environment A and Y to environment B.*

The case I will discuss has already been mentioned in connection with the 1:1 principle: the early preference for using past verbal inflections on punctual verbs much more than other verbs. The particular case comes from SLA of Spanish, where more specifically the preterit verb form appears earlier than the imperfect form. This is also true for first language acquisition of Spanish and Portuguese (Jacobsen 1986, Simões & Stoel-Gammon 1979). The primary argument advanced to explain this is that unitary punctual events are especially salient and there is a need to distinguish such events formally from other less salient events, through, in this case, verbal inflection. But there exists the possibility that preterit forms are more abundant in the input than imperfect forms. From a study I did of one sample of native Spanish, this indeed seems to be the case: by both a type and a token count, preterit forms clearly outnumbered imperfect forms. Moreover, it also appears that certain of the more frequent verbs occur mainly in one of the two possible past forms, which introduces another bias into the input. For example, punctual verbs like 'break' occur mainly in preterit form, and states like 'know' in imperfect form. It is thus quite

possible that an accidental distributional bias within the target language causes the learner to err in the direction of that bias. It is also clear, however, that certain potential distributional biases do not actually lead the learner in the direction of this bias. (See Andersen 1986c for further details.)

A design for testing this principle in a foreign language classroom is quite straightforward. Two groups of learners, none of whom have had any exposure to past verb forms in Spanish, could be given identical input except for past verb forms. Group 1 would receive input in which punctual verbs were only encoded in preterit form and nonpunctual verbs (states and activities) were only encoded in imperfect form. Group 2 would receive the same input except that each verb would appear equally as often in preterit form and imperfect form (e.g., caer 'fall' and ser 'be' would appear as cayó, caía and era, fue). Designing the input so that it is as natural and as communicative as possible is, however, not so straightforward and would require careful piloting. If the Distributional Bias principle is valid, the learners in Group 1 should acquire the preterit and imperfect forms to the same degree, but restrict each verb to only one of the two forms, whereas Group 2 should acquire some instances of both forms for the same verb: preterit and imperfect forms. This design can be extended to also reflect greater frequency of preterit forms over imperfect forms (as in the native input I sampled) for one group and the reverse (greater frequency of imperfect forms over preterit forms) in the other. A counter-prediction to such studies would be that the inherent semantics of the individual verb strongly controls the tense-aspect inflection that will initially be attached to it.[8]

(5) Relevance.

The Relevance Principle comes from Bybee 1985. For ease of presentation I will use Slobin's Operating Principle version of it:

> *OP (POSITION): RELEVANCE. If two or more functors apply to a content word, try to place them so that the more relevant the meaning of a functor is to the meaning of the content word, the closer it is placed to the content word. If you find that a Notion is marked in several places, at first mark it only in the position closest to the relevant content word. (Slobin 1985:1255)*

We can explore this principle using the examples of Spanish verb morphology discussed earlier. What predictions could we make with regard to acquisition of verbal inflections for aspect, tense, and subject-verb agreement? Following Bybee (1985:196ff), we expect that aspect would be perceived and internalized earliest, since it is most relevant to the lexical item to which it attached, the verb. Tense would be next, since tense has wider scope than aspect, but is more relevant to the verb than subject-verb agreement, which would be last.

The research I am doing on SLA of Spanish (Andersen 1986a, b) as well as related studies in first language acquisition (Jacobsen 1986, Simões & Stoel-Gammon 1979) support the prediction that aspect is encoded before tense and that subject-verb agreement does not appear until at least aspect is taken care of and probably tense also. (The status of tense as separate from aspect is problematic, since the inflections in question encode both tense and aspect.) Related work on SLA of English clearly supports the prediction that tense- aspect inflections will generally appear before subject-verb agreement inflections (third person singular - s). However, as discussed earlier, none of these categories (aspect, tense, agreement) is acquired as a whole, in one abrupt and dramatic step. And, since some but not all verbal inflections are multifunctional in that they encode not only aspect but also tense and subject- verb agreement, the relative attention paid to any one of these categories by the learner changes over time as the learner acquires greater sophistication in the language.

There is also a logical implication in the Relevance Principle for classroom-based foreign language acquisition. Inflections that are most closely relevant to the content word to which they are attached should be acquired earliest. For example, gender marking should appear earlier for natural gender than for simply grammatical gender and gender marking should appear earlier on the noun (which has the gender) than on any determiners or adjectives associated with the noun (see Andersen 1984b). For English, the - s on nouns that mark number should be acquired before the - s that marks possession and both before the - s that marks third person singular. This is supported by SLA research (see summary in Andersen 1978), but the prediction is complicated by the fact that frequency in native English would make the same prediction (Larsen-Freeman 1976).

(6) Transfer to Somewhere.

The Transfer to Somewhere Principle states that :

> A grammatical form or structure will occur consistently and to a significant extent in the interlanguage as a result of transfer *if and only* if (1) natural acquisitional principles are consistent with the L1 structure or (2) there already exists within the L2 input the potential for (mis- generalization from the input to produce the same form or structure. Furthermore, in such transfer preference is given in the resulting interlanguage to *free*, *invariant*, functionally *simple* morphemes which are congruent with the L1 and L2 (or there is congruence between the L1 and natural acquisitional processes)

> and [to] morphemes [which] occur frequently in the L1 and/or the L2 (Andersen 1983b:182).

I will provide only one example here, since I have discussed this principle in detail elsewhere (Andersen 1983b; earlier versions in Andersen 1979a, 1980, and 1982).

Zobl (1980) has pointed out that, while English speakers will place object pronouns postverbally in their French interlanguage, following English word order but violating French rules, French learners of English do not follow French rules for placement of object pronouns in their English. The explanation for this follows the Transfer to Somewhere Principle: both French and English require postverbal placement of full NPs, which provides a model for postverbal placement of pronouns, which happens to match English but violate French rules. Thus, English speakers have a model in the input to transfer to: postverbal placement of full NP objects in French. But French speakers have no such native English model to cause them to transfer their preverbal placement of clitics to English.[9] A similar finding pertains to the acquisition of Spanish by English speakers (Andersen 1983b). The Spanish data, however, reveal that the Transfer to Somewhere Principle (or any equivalent transfer principle) operates in conjunction with other operating principles (such as the Principle of Formal Determinism discussed previously).

What might such a principle mean in a foreign language classroom context? I will postpone discussion of this until after I outline the next principle.

(7) Relexification.

In accounting for the special type of second language acquisition which results in a pidgin language, Derek Bickerton argues that the main determinant of the resulting structure of the pidgin is relexification from the pidgin speaker's native language. He offers examples such as the following, from a Japanese speaker of Hawaiian Pidgin English, which shows Japanese-influenced verb-final sentence structure (Bickerton 1977:53):

> as kerosin, plaenteishan, wan mans, fo gaelan ***giv***
> 'The plantation ***gave*** us four gallons of kerosene a month.'

A Relexification Principle could be stated as follows:

> *When you cannot perceive the structural pattern used by the language you are trying to acquire, use your native*

language structure with lexical items from the second language.

As stated this principle is still too imprecise. Even in the unique situation of the pidgin speakers who have limited or absolutely no access to native English, such uses of verb-final structures, while as frequent as 60% of all sentences, are usually lower and there is definitely no categorical relexification from Japanese. Somehow we need to better explain this variable use of what is apparently relexification of the native language in the use of the second language.

One may easily argue that the pidgin situation is far too different from the normal SLA situation. The pidgin setting is certainly quite unique, especially with regard to the lack of access to adequate input on which to model acquisition of the second language. Nevertheless, it is not hard to find examples of such apparent relexification in the English of Japanese-speaking immigrants to the continental United States, speakers whose English is far more "English-like" than that of the Hawaiian Pidgin English speakers. One such example is given below. Most of the time this speaker follows quite clearly an English subject-verb-object pattern. But it appears from this excerpt (and others like it), that a Japanese-based processing preference for final placement of verbs is still at work in this speaker's use of English (example from Kuwahata 1984; verb is in bold italics, object in square brackets):

INTERVIEWER
1. When you were in Japan, did you ever study English?

KEI
2. I never ***study*** [English].
3. I don't ***like*** [a English], because (chuckle) yes.

INTERVIEWER
4. Why didn't you like English?

KEI
5. Because...I never ***talk*** [to American people],
6. I'm never learn.
7. Then, I'm (gonna) marry,
8. must be [English], I ***am study***.
9. Then, I'm not ***marry*** [... (the) American people],
10. I not [English], ***take*** [the class].
(laugh)
11. I ***have*** [a Junior high school],
12. never [English], ***take*** [the class].
13. Never.
14. I don't ***like*** [a English].

Kei uses both English verb-object word order and an apparent double-object construction: object verb object. It appears that, in utterances like 8, 10, and 12, Kei repairs an "in-progress" object + verb construction by adding a second object, which fits well into the information flow. That is, I am suggesting that she is initially aiming at "I not [English class] ***take***," but is able to repair such a clearly non-English construction while speaking.

In a setting where the learner has access to native English input, the Transfer to Somewhere Principle would predict that such constructions, based on relexification, would be infrequent and short-lived precisely because there is no "somewhere" in native English to transfer to, nor do any of the operating principles support a preference for object-verb constructions. In other words, in acquisition-rich environments, the learner would soon realize that the native English input does not contain constructions with the verb after the object. It may be the case that, in settings where pidgin languages develop, there is not enough input from the target language available to promote transfer based on the Transfer to Somewhere Principle and relexification is the only resource the learner has. It should be noted, however, that, whereas Japanese has utterance-final placement of the negator, such a position appears **never** to be used in either Hawaiian Pidgin English nor the English of Japanese immigrants to the continental U.S. (see the examples with not in the excerpt above). This difference somehow has to be accounted for, whether in further specification within the Relexification Principle or in some interaction between several of the operating principles.

Both the Transfer to Somewhere Principle and the Relexification Principle, if they are, indeed, separate "principles," are potentially relevant to the foreign language classroom context. Research to explore their effects would have to be conducted along the lines of studies like Cancino (1976), who compared the English of a Spanish speaker with that of a Japanese speaker. Since Japanese and Spanish differ in very clear ways, the relative effects of transfer can be readily studied in the learners' English. Cancino's subjects were young children acquiring English through natural contact. It appears that the dramatic type of relexification discussed by Bickerton for pidgin settings does not occur in such naturalistic settings. At least Cancino and Hakuta (1976), who conducted the study from which the Japanese-English data was taken, do not mention examples.

It would seem, however, that in a foreign language classroom setting where most of the "input" is in the form of examples, rules, and paradigms, with little or no access to natural speech of native speakers, the Relexification Principle would assume a much more important role in governing construction of the interlanguage than the Transfer to Somewhere Principle. Research designed to test these two principles within a classroom context would have to control input carefully in order to determine the source of learner's interlanguage constructions. The hypothesis to be tested would be that, when learners are pro-

vided with adequate native speaker input they will follow only the Transfer to Somewhere Principle and not the Relexification Principle, while learners in an acquisition-poor classroom would be more likely to fall back on relexification.

STRATEGIES OF LANGUAGE USE (BY NATIVE AND NONNATIVE SPEAKERS)

I have focussed most of my discussion on the cognitive processes I believe guide language acquisition in a variety of settings. The particular setting from which I have drawn examples, however, is that of natural noninstructed second language acquisition. In such settings the learner presumably gets access to the language being learned through a variety of short as well as more involved interactions with native speakers (and probably other nonnative speakers). It is through such interactions that the learner is able to perceive new forms and constructions as well as new form:meaning relations and thus expand his interlanguage system in the direction of the native target.

The communication strategies used by native and nonnative speakers during native-nonnative interaction have been well-documented over the years in such studies as Hatch 1978b, Gass & Varonis 1984, 1985a,b,c, Long 1981a,b, Peck 1978, and Tarone 1977, 1980, and in collections such as Day 1986, Hatch 1978a, Larsen-Freeman 1980, Seliger & Long 1983, and Wolfson & Judd 1983. A detailed treatment of the role of such communication strategies in facilitating acquisition of new forms and their meanings, functions, and distribution in the second language requires a paper at least as long as this one, if not a book. To underscore the importance of such communication strategies in acquiring new forms, I will draw on an unpublished paper by Barbara Hawkins, a Ph. D. student at UCLA, who has taught me a lot about the value of such interaction.

In a joint study of Hawkins' learning of Papiamentu in an experimental communicative-language teaching course at UCLA, Hawkins and two other students investigated various aspects of Hawkins' communication with a native speaker after ten weeks of instruction in Papiamentu. In her paper Hawkins combined procedures of discourse analysis, following Hatch 1978b, 1983, with retrospective comments by herself and in an interview (in English now) with the native speaker of Papiamentu, to try to access the communication strategies used by both the native and nonnative speaker in communication. (See Hawkins 1985 for further use of these procedures.) In the example I will cite here, Hawkins was trying to tell the native speaker that she had a sister who was going to get married, but she didn't know how to say "going to" in Papiamentu, which is ta bai. She tries to use an irrealis marker, lo, which also serves as a future marker, but she was aware that it was not appropriate and that she didn't know how to do it right (Hawkins' retrospective comments are in italics):

H:Mi tin un ruman muh/e ku ta-
No, ku... uhm ... let's see...
ku ***lo***, ***lo*** a ... kas-
ku ***lo*** a tin kas-
ku ***lo*** tin kas/a...
I don't know... I just forget.
Na... No... Okay.

[H: I have a sister who is-
No, who... uhm ... let's see...
who will, would... marr-
who would have hus-
who will have a husband...

(RETROSPECTION: I remember struggling to form the future and not knowing; I wanted him to tell me)

NS: Kon e yama?
Bo ruman ku ***ta bai*** kasa?

NS: What's her name?
Your sister who is going to get married?

(RETROSPECTION: I knew immediately that this meant, "is going to marry" -- from Spanish.)

H: Oh. Ku ***ta bai*** ... a kasa ...
a kasa?

H: Oh. Who is going to ... to-marry
to to-marry?

(RETROSPECTION: I wasn't sure if the "a" was present. I was thinking of Spanish.)

NS: Ku ***ta bai*** kasa.

NS: Who is going to marry.

H: Ah, si?

H: Oh, yah?

NS: Si?

NS: Yah?]

(RETROSPECTION: I got it! I was really excited.)

(The two occurrences of si? at the end may be difficult to follow. Hawkins' Si? means, "Oh, that's how you say it?" The native speaker's Si? means, "Oh, she's going to get married?") (Hawkins 1981:83)

Hawkins' comment in her conclusion is relevant here: "For the student, early speech may be learning to say, "Huh?", until understanding is achieved. Beyond this, I think it would be worthwhile to teach students to use all of the various mechanisms involved in repair requests. If students know how not to let themselves be overcome by native speech that is too fast or beyond their vocabulary limits, they can, slowly but surely, progress in the target language (p. 86)."

Such repair strategies would form part of the "interaction" portion of the cognitive-interactionist model I have tried to outline in this paper. In this paper I have focussed almost completely on the cognitive side of this model, since I believe that it is here that there is considerable common ground between second and foreign language learning. This is also the area to which I have devoted most of my attention in my research. But in a foreign language classroom environment like the one in which Hawkins learned Papiamentu, the interaction with the language must be planned for and carefully orchestrated, in contrast with the natural acquisition of a second language through interaction with native speakers on their home territory. In many ways the foreign language classroom is a better laboratory for studying the relative roles of cognitive operating principles and interaction stategies than the second language setting, since better controls can be imposed in the classroom setting.

SUMMARY AND CONCLUSION

What kinds of goals should we have for the future to pursue the factors which govern progress in acquiring a foreign language in a classroom setting and what role can naturalistic second language research play in such research ? There is always a tendency for specialized subfields, such as the subfields of natural SLA vs classroom-based foreign language acquisition, to treat each other as pursuing different questions and producing results only minimally relevant to each other. This has already happened to some degree: those interested in a classroom setting tend to pursue their own paradigms and research procedures quite different from those in what is commonly referred to as "interlanguage studies," and vice versa. Whether one wants to "buy" this particular congitive-interactionist model or not, I believe much can be gained by exploring both the cognitive principles and the interactional strategies that must be at the core of second language acquisition both in and outside of the classroom. Nonclassroom-focussed SLA research stands to gain much from classroom-centered research and classroom-centered research can benefit considerably from the type of research carried on in settings outside of the classroom. And, in order to understand how authentic language texts can form the basis of successful second language acquisition in a foreign language classroom, we need to understand the nature of natural second language acquisition. This theoretical framework is meant to be a step in the right direction in arriving at this understanding.

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NOTES

[1] I will limit my discussion to only this particular model.

[2] The term nativization is used for this model because of the origin of the model in an acquisition view of the creation of a creole language: when a creole language first is created, the children creating it are, in effect, creating a new native language. Thus nativization is meant to capture what it takes to create a new native language. As extended to other first and second language acquisition situations, it should suffice to quote from an earlier discussion of the model (Andersen 1983a:11):

> Creolization, pidginization, and the creation of a unique interlanguage in first and second language acquisition in early stages of acquisition share one attribute -- the creation of a linguistic system which is at least partly autonomous from the input used for building that system. This system can then be considered "native" to the individual in that it is the individual's mental capacity to construct such a linguistic system that makes it possible for a new "native" language to arise, as in the creation of a creole language. Each individual has the potential for creating his own system. New input then must assimilate to his system. This process of creating an individual autonomous system I call nativization in order to capture what is common to these four cases.

[3] See also Jordens 1987 and Taylor 1987 for possible counterevidence and alternative interpretations.

[4] I must clarify that I am not prescribing doing away with 'the usual rules, examples, and paradigms for memorization and practice,' Rather I wish to focus attention on the need for new research within a communicative framework which also permits manipulation of input so as to test some of these hypotheses.

[5] Earlier SLA research had considered and rejected Slobin's operating principles as an explanatory framework for SLA. Dulay & Burt 1974 and Larsen- Freeman 1975, for example, objected that Slobin's 1973 OPs were difficult to test and were not mutually exclusive. As Bowerman's 1985 critical evaluation of the revised OPs reveals, these limitations are still there. Such criticism would also apply to the principles discussed here for SLA. My position on this criticism is that rather than rejecting the OPs (with nothing comparable to replace them), we should work with them as they are and improve on them with further research. Besides, the difficulties faced in testing some of the operating principles as well as the interrelatedness of certain OPs with each other are quite possibly the result of the complexity of language and human cognition, not necessarily a weakness in the operating principles.

[6] For German (Clahsen 1984) and French (Trevise & Noyau 1984) this needs to be rephrased as "immediately next to (before or after) the main verb" for propositional negation. But this qualification is probably the result of the Formal Determinism Principle.

[7] This hypothesis is similar in many respects to Krashen's Input Hypothesis and his focus on the hypothetical Gi + 1 stage of development, as well as Pienemann's research on formal instruction that fits the learner's particular stage of development. The major difference is that Krashen's work depends on a view of acquisition in terms of whole target-language morphemes being acquired in one fell swoop (such as "article" or "copula") and Pienemann's work also depends on discrete target-language syntactic rules. A Multifunctionality Principle predicts that there are a number of small changes leading up to so-called "acquisition" of the target-language form or construction and it is these small changes that should be researched.

[8] At least one additional variable must be considered in such a design: time between contact with such input and first spontaneous use of the forms in question. This variable must be explored in pilot studies or as a separate dependent variable.

[9] This also conforms to Eckman's (1977) Markedness Differential Hypothesis.

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